DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 26, 2010 has been entered.

Claims 76-107 are withdrawn. Claims 93 and 118 have been amended. New claims 136-139. Claims 108-116, 118-127 and 135-139 are under examination in this Office action.

The Examiner of your application in the USPTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Examiner Agnieszka Boesen Art Unit 1648.

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 11/26/2010, 12/28/2010 and 5/5/2011 are is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 103

Rejection of Claims 108-114 under 35 U.S.C. 103(a) as being unpatentable over Jorgensen et al PreGrant Pub. No. 2002/0188023 A1, published December 12, 2002 **is withdrawn** in view of Applicant's arguments.

Rejection of Claims 108-116 and 118-127 under 35 U.S.C. 103(a) as being unpatentable over Miller et al., WO 97/45442, published December 4, 1997.[i] in view of Jorgensen et al. U.S. PreGrant Pub. No. 2002/0188023 A1, published December 12, 2002[ii] **is withdrawn** in view of Applicant's arguments.

New Rejections

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 108-114, 116, 118-127 and 135-139 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The present claims are drawn to a vaccine comprising an amount of sphingoid-polyalkylamine conjugate and an amount of an immune response modulating biologically active molecule, the amount of said biologically active molecule being effective to modulate the immune response of a subject and the amount of said sphingoid polyalkylamine conjugate being effective to enhance the activity of said biologically active molecule on the immune response of the subject, wherein said biologically active molecule is an antigenic protein, antigenic peptide, antigenic polypeptide, or a carbohydrate. Claim 116 requires that the biologically active agent is a molecule derived from influenza virus or an analog derived from influenza virus.

Claims are rejected because the present specification does not fully describe the genus of sphingoid-polyalkylamine conjugates or the genus of influenza virus analog molecules that have the function to effectively modulate the immune response of a subject to induce protective immune responses implied by the recitation of a "vaccine" in the present claims. It is noted that present claim 115 reciting this particular species is not rejected.

The specification discloses a species of sphingoid-polyalkylamine conjugate such as N-palmitoyl D-erythro sphingosyl carbamoyl-spermine (CCS) and shows encapsulation efficiency of CCS and influenza HN antigen (Table 1) and paragraphs [0075] and [0077]. The specification describes that vaccination of mice with CCS, cholesterol and influenza HN antigen, as well as other liposomes DMPC, DSTAP and DOTAP, cholesterol and influenza HN antigen induced antibody immune response wherein the strongest antibody immune response was induced using CCS cholesterol and influenza HN antigen and DMTAP, cholesterol and influenza HN antigen (Table 2A). It is not clear whether DMTAP belongs to the genus of sphingoid-polyalkylamine conjugates. It is however noted that the specification describes only one species such as CCS from the claimed genus of sphingoid-polyalkylamine conjugates which has the function of inducing antigen specific immune responses. The specification does not provide structure and function correlation between the other members of the genus of sphingoid-polyalkylamine conjugates comprising multiple structures of unknown properties which may or may not have adjuvant properties.

[0075] The most preferred sphingoid-polyalkylamine conjugate according to the invention is N-palmitoyl D-erythro sphingosyl carbamoyl-spermine (CCS). This conjugate includes a ceramide linked via a carbamoyl bond to spermine.

[0077] According to one embodiment, the sphingoid-polyalkylamine conjugate, and preferably the CCS, is used for the preparation of an influenza vaccine. In this particular

embodiment, the biologically active material is derived from the influenza virus or a biologically active analog of a molecule derived from influenza virus. Such analogs include any substance which includes an influenza derived antigenic fragment which elicits an immune response.

The claims are rejected because Applicant's disclosure does not provide sufficient evidence that Applicant was in possession of a representative number of species sphingoid-polyalkylamine conjugates that have a function to effectively modulate the immune response of a subject to induce protective immune responses implied by the recitation of a "vaccine" in the present claims.

To provide adequate written description and evidence of possession of a claimed genus, the specification must provide sufficient distinguishing identifying characteristics of the genus. The factors to be considered include disclosure of complete or partial structure, physical and/or chemical properties, functional characteristics, structure/function correlation, methods of making the claimed product, or any combination thereof. In this case, the specification contemplates a genus of sphingoid-polyalkylamine conjugates. Besides one representative species of N-palmitoyl D-erythro sphingosyl carbamoyl-spermine (CCS), the skilled artisan would not know the specific structural requirements that are critical for adjuvant properties of the sphingoid-polyalkylamine conjugates. Accordingly, in the absence of insufficient recitation of distinguishing identifying characteristics, the specification does not provide adequate written description of the claimed genus.

Vas-Cath Inc. v. Mahurkar, 19USPQ2d 1111, clearly states "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is, for purposes of the 'written description' inquiry, whatever is now claimed." (See page 1117.) The specification does not "clearly allow persons of

ordinary skill in the art to recognize that [he or she] invented what is claimed." (See *Vas-Cath* at page 1116). As discussed above, the skilled artisan cannot envision the detailed structures of the compounds encompassed by the genus of sphingoid-polyalkylamine conjugates having the adjuvant function, and therefore conception is not achieved until reduction to practice has occurred. For the written description requirement, an applicant's specification must reasonably convey to those skilled in the art that the applicant was in possession of the claimed invention as of the date of invention. *Regents of the University of California v. Eli Lilly & Co.*, 119 F.3d 1559, 1568, 43 USPQ2d 1398, 1405 (Fed. Cir. 1997); *Hyatt v. Boone*, 146 F.3d 1348, 1354, 47 USPQ2d 1128, 1132 (Fed. Cir.1998).

The skilled artisan cannot envision the detailed structure of a genus of sphingoid-polyalkylamine conjugates or influenza virus analogs that are contemplated in the invention. Conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the structures disclosed in the as-filed specification. Thus, in view of the reasons set forth above, one skilled in the art at the time the invention was made would not have recognized that applicant was in possession of the claimed invention as presently claimed.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined

application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 108-116, 118-127 and 135-139 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-8 of U.S. Patent No 7,906,122. Although the conflicting claims are not identical, they are not patentably distinct from each other because the present claims and the claims of the U.S. Patent No 7,906,122 are drawn to a product comprising N-palmitoyl D-erythro sphingosyl carbamoyl spermine (CCS) which is a sphingoid-polyalkylamine and an antigen.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AGNIESZKA BOESEN whose telephone number is (571)272-8035. The examiner can normally be reached on 9:00 AM to 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zachariah Lucas can be reached on 571-272-0905. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Agnieszka Boesen/
Primary Examiner, Art Unit 1648

---

[i] Miller et al. WO 97/45442, published December 4, 1997.
[ii] Jorgensen et al. U.S. PreGrant Pub. No. 2002/0188023 A1, published December 12, 2002.